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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included. (AG)

B-567
S-287

United States Employment Service Technical Report

March 1966

ED 065633

Development of USES Aptitude Test Battery

for

Psychiatric Aid

(medical ser.) 355.878

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EDUCATION & WELFARE
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Washington, D.C. 20210

ED 065633

Technical Report on Development of USES Antitude Test Battery

For .....

Psychiatric Aid (medical ser.) 2-42.22
(355.878)

B-567 or S-287

U. S. Employment Service
in Cooperation with
Colorado, Minnesota, Ohio and Pennsylvania
State Employment Services

March 1966

DEVELOPMENT OF USES APTITUDE TEST BATTERY

For

Psychiatric Aid (medical ser.) 2-42.22

(355.878)

S-289

This report describes research undertaken for the purpose of validating and cross-validating General Aptitude Test Battery (GATB) norms for the occupation of Psychiatric Aid (medical ser.) 2-42.22 (3rd Edition DOT code 355.878). The following norms were established:

GATB Aptitudes	Minimum Acceptable GATB, B-1002 Scores
G - General Learning Ability	85
V - Verbal Aptitude	75
O - Clerical Preception	80

RESEARCH SUMMARY

Sample:

Validation (Minnesota and Ohio combined sample): 241 workers employed as Psychiatric Aids in Minnesota and Ohio.

Cross-Validation Sample I: (2 Colorado samples combined) 110 Psychiatric Aid trainees in Colorado.

Cross-Validation Sample II: (Pennsylvania) 55 employed Psychiatric Aids in Pennsylvania.

Criteria:

Validation Sample: Supervisory ratings

Cross-Validation Sample I: Course grades

Cross-Validation Sample II: Supervisory ratings

Design:

Validation Sample: Concurrent (test and criterion data were collected at approximately the same time).

Cross-Validation Sample I: Longitudinal (test and criterion data were collected approximately one year apart).

Cross-Validation Sample II: Concurrent (test and criterion data were collected at approximately the same time).

Minimum aptitude requirements were determined on the basis of a job analysis and statistical analyses of aptitude mean scores, standatd deviations, aptitude-criterion correlations and selective efficiencies.

Concurrent Validity:

Validation Sample: Phi Coefficient = .34 ($P/2 < .0005$)

Cross-Validation Sample II: Phi Coefficient = .40 ($P/2 < .005$)

Predictive Validity:

Cross-Validation Sample I: Phi Coefficient = .18 ($P/2 < .05$)

Effectiveness of Norms:

Validation Sample: Only 71% of the non-test-selected workers used in this sample were good workers; if the workers had been test-selected with the above norms, 83% would have been good workers. 29% of the non-test-selected workers used in this sample were poor workers; if the workers had been test-selected with the above norms, only 17% would have been poor workers.

Cross-Validation Sample I:
Only 74% of the non-test-selected trainees in this sample were good trainees; if the trainees had been test-selected with the above norms, 78% would have been good trainees. 26% of the non-test-selected trainees in this sample were poor trainees; if the trainees had been test-selected with the above norms, only 22% would have been poor trainees.

Cross-Validation Sample II:
Only 62% of the non-test-selected workers in this sample were good workers; if the workers had been test-selected with the above norms, 74% would have been good workers. 38% of the non-test-selected workers in this sample were poor workers; if the workers had been test-selected with the above norms, only 26% would have been poor workers.

The effectiveness of the norms is shown graphically in Table 1a, 1b and 1c.

TABLE 1a

Effectiveness of Norms - Validation Sample

	Without Tests	With Tests
Good Workers	71%	83%
Poor Workers	29%	17%

TABLE 1b

Effectiveness of Norms - Cross-Validation Sample I

	Without Tests	With Tests
Good Trainees	74%	78%
Poor Trainees	26%	22%

TABLE 1c

Effectiveness of Norms - Cross-Validation Sample II

	Without Tests	With Tests
Good Workers	62%	74%
Poor Workers	38%	26%

VALIDATION SAMPLE DESCRIPTION

Size: N = 241

Occupational Status: Employed workers

Work Setting: Workers were employed in two State Hospitals located in Rochester and Cambridge, Minnesota and at Hawthorden State Hospital in Macedonia, Ohio.

Employer Selection Requirements:

Education: Minnesota hospitals - prefer high school graduates

Ohio hospitals - none

Previous Experience: None at any of the hospitals

Tests: Minnesota hospitals - Otis Self-Administering Test of Mental Ability, Form B.

Ohio hospital - None

Other: All hospitals - Oral interview

Minimum Experience:

Validation Sample: Minnesota hospitals - All workers in the sample had at least 2 months experience on the job.
Ohio hospitals - All workers in the Sample had at least 6 months experience on the job.

TABLE 2a
Validation Sample

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience

	Mean	SD	Range	r
Age (years)	41.4	11.4	20-67	-.106
Education (years)	10.5	1.9	7-16	.159*
Experience (months)	56.6	44.6	2-288	-.102

* Significant at the .05 level

TABLE 2b
Cross-Validation Sample I (Colorado Samples)

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for Age and Education

	Means	SD	Range	r
Age (years)	28.6	10.5	17-57	.139
Education (years)	12.2	.8	10-16	-.013

TABLE 2c
Cross-Validation Sample II (Pennsylvania Sample)

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience

	Means	SD	Range	r
Age (years)	44.4	12.6	21-66	-.066
Education (years	11.1	2.1	8-16	.368**
Experience (months)	78.5	73.5	6-360	-.068

** Significant at the .01 level.

EXPERIMENTAL TEST BATTERY

All 12 tests of the GATB, B-1002 were administered.

VALIDATION SAMPLE CRITERION

The criterion data consisted of supervisor ratings of job proficiency made at approximately the same time as test data were collected. Two sets of independent ratings were made by supervisors at each hospital with a 2-4 weeks interval between ratings.

Rating Scale: An adaptation of the USES Form SP-21, "Descriptive Rating Scale."

Criterion Dichotomy: The criterion distribution was dichotomized into low and high groups by placing 29% of the sample in the low group to correspond with the percentage of workers considered unsatisfactory or marginal. Workers in the high criterion group were designated as "good workers" and those in the low group as "poor workers".

APTITUDES CONSIDERED FOR INCLUSION IN THE NORMS

Aptitudeswere selected for tryout in the norms on the basis of a qualitative analysis of job duties involved and a statistical analysis of test and criterion data. Tables 3, 4 and 5 show the results of the qualitative and statistical analyses.

TABLE 3

Qualitative Analysis
(Based on the job analysis the aptitudes listed appear to be important to the work performed)

Aptitude	Rationale
G - General Learning Ability	Necessary to learn operating procedures and regulations, medical terminology and medical care procedures, and to comprehend informational and instructional data.
V - Verbal Aptitude	Necessary to review and discuss special problems of patients and of ward conditions; to make intelligent entries on charts and day books and to communicate with patients.

Q - Clerical Perception	Necessary to take patients' temperature, pulse and respiration and to record information on patients' charts. Also necessary to accurately read doctors' orders for medication.
M - Manual Dexterity	Necessary in administering hypodermic injection, applying medical dressings, bathing, dressing and attending to patients' personal need; in handling and using various pieces of hospital equipment such as thermometers, scissors, bed pans, trays and sterilizers.

TABLE 4
Validation Sample

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r)

Aptitude	Means	SD	Range	r
G - General Learning Ability	94.5	16.9	53-140	.311**
V - Verbal Aptitude	96.9	15.5	63-145	.245**
N - Numerical Aptitude	90.4	17.3	38-144	.288**
S - Spatial Aptitude	94.6	18.8	58-147	.226**
P - Form Perception	88.2	20.5	25-135	.233**
Q - Clerical Perception	94.4	14.7	56-132	.242**
K - Motor Coordination	95.9	18.4	41-153	.186**
F - Finger Dexterity	90.7	20.8	42-164	.196**
M - Manual Dexterity	90.5	21.4	17-166	.224**

** Significant at the .01 level

TABLE 5

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	X	X				X			X
Irrelevant									
Relatively High Mean	X	X		X			X		
Relatively Low Standard Dev.						X			
Significant Correlation with Criterion	X	X	X	X	X	X	X	X	X
Aptitudes to be Considered for Trial Norms	G	V		S		Q	K		M

DERIVATION AND VALIDITY OF NORMS

Since all nine aptitudes correlated significantly with the criterion, only those aptitudes which showed additional statistical or qualitative evidence were given further consideration for inclusion in trial norms. Final norms were derived on the basis of a comparison of the degree to which trial norms consisting of various combinations of aptitudes G, V, S, Q, K and M at trial cutting scores were able to differentiate between the 71% of the sample considered good workers and 29% of the sample considered poor workers. Trial cutting scores at five-point intervals approximately one standard deviation below the mean were tried because this will eliminate about one third of the sample with three-aptitude norms. For two-aptitude norms, cutting scores of slightly more than one standard deviation below the mean will eliminate about one-third of the sample; for four-aptitude norms, cutting scores of slightly less than one standard deviation below the mean will eliminate about 1/3 of the sample. The Phi Coefficient was used as a basis for comparing trial norms. Norms of G-85, V-75 and Q-80 provided the highest degree of differentiation for the occupation of Psychiatric Aid 355.878. The validity of these norms is shown in Table 6a.

TABLE 6a

Concurrent Validity of Test Norms for Validation Sample (G-85, V-75, Q-80)

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Workers	43	128	171
Poor Workers	43	27	70
Total	86	155	241

Phi Coefficient (ϕ) = .34 Chi Square (X^2) = 28.510
Significance Level = P/2 $<$.0005

Norms established on the basis of data for the Validation Sample (G-85, V-75, Q-80) were cross-validated on a sample of 110 Psychiatric Aid Trainees at various hospitals in Colorado (Cross-Validation Sample I) and on a sample of 55 Psychiatric Aids employed at several hospitals in Pennsylvania (Cross-Validation Sample II). The validity of the norms for these samples is shown in Tables 6a and 6b.

TABLE 6b

Predictive Validity of Test Norms for Psychiatric Aid 355.878
Cross-Validation Sample I (Colorado)

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Workers	19	62	81
Poor Workers	12	17	29
Total	31	79	110

Phi Coefficient (ϕ) = .18 Chi Square (X^2) = 3.410
Significance Level = P/2 $<$.05

TABLE 6c

Concurrent Validity of Test Norms for Psychiatric Aid 355.878
Cross-Validation Sample II (Pennsylvania)

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Workers	5	29	34
Poor Workers	11	10	21
Total	16	39	55

Phi Coefficient (Ø) = .40 Chi Square (X^2) = 8.932
Significance Level = P/2 <.005

DETERMINATION OF OCCUPATIONAL APTITUDE NORMS

The data for this study did not meet the requirements for incorporating the occupation studied into any of the 36 OAP's included in Section II of the Guide to the Use of the General Aptitude Test Battery. The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.

S-287

March 1966

FACT SHEET

Job Title: Psychiatric Aid (medical ser.) 355.878 (2-42.22

Job Summary: Cares for patients' needs under the direction of the professional staff in a State hospital or school for mentally ill, senile, retarded or convulsive patients.

Work Performed: Meets with incoming staff members such as Charge Aides, Nurses and other Aides at the beginning of each shift to discuss and review special problems of patients and conditions in hospital wards or in cottages.

Prepares and maintains records of medication, diet, laboratory tests, and physical condition of patients using blue ink for day and red ink for night entries on a variety of multi-colored record forms and cards. Records patients' weight, temperature, pulse, respiration, urine, stool, medication and treatment. Enters observable behavior changes, fights or arguments and unusual physical conditions, such as medication sensitivity, rashes, bleeding gums, bumps and bruises, in Nurses' and Aides' record for each patient. Makes entries in Record and Day Book concerned with general conditions in the ward.

Bathes or supervises the daily cleaning of patients. Bathes hospitalized bed patients in bed or on slab near bed. Escorts ambulatory patients to showers, adjusts water temperature and bathes patients who are unable to bathe themselves. Combs, grooms and shampoos patient's hair. Cleans and cuts patient's fingernails and toenails. Brushes teeth or swabs out mouth of patients who are unable to do it themselves. Sets tables or prepares food trays, serves food to patients, and cleans up eating areas after meals.

Gives medications prescribed by physician. Selects appropriate syringe for intramuscular injections depending on type and dosage of medication. Applies warm packs and gives alcohol and special lotion rubs, enemas and starch baths as required by physician. Furnishes oxygen tents to patients and regulates oxygen. Empties bed pans and urinals. Records individual or group behavior problems among hospitalized or cottage patients. Supervises, assists or dresses patients. Escorts and supervises patients singly or in groups to places beneficial for the patient's treatment, such as school, theater, hospital laboratory or medical specialist, dentist, recreational area, occupational therapy, physical therapy, picnics, camping, swimming or visits to town. Assembles and checks out suitable clothing supplies for patient's use. Contacts Aide or Registered Nurse for emergency or difficult problems with patients.

Trains patients to wash and clean sleeping, eating and living quarters, using common cleaning tools, such as brooms, mops, rags, pails, soap and water. Trains patients in bed making or makes beds and keeps rooms clean for bedridden patients. Disposes of dirty linens or clothes. Operates sterilizing machine in hospital to sanitize tin ware such as bed pans, washing pans and urinals.

Reports plumbing, electrical and carpentry problems to maintenance department for repairs. Marks patient's clothing and stores it in clothing room. Assists in checking drugs, using narcotic check book and chart. Operates warm packing machine in hospital as required.

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S-287

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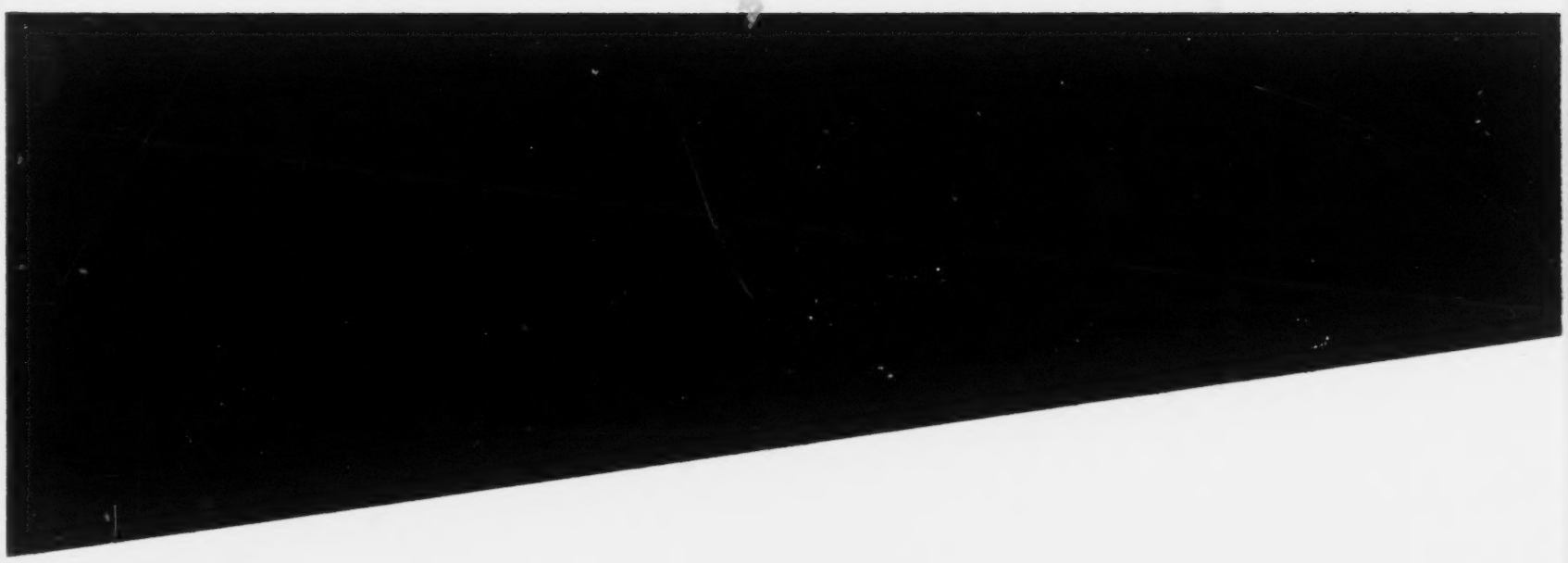

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